

WHAT IS CLAIMED IS:

1. A communications system, comprising:
  - a channel encoder for encoding a plurality of information bits;
  - a mapping unit coupled to the channel encoder for mapping the plurality of information bits into a first set of quadrature phase shift keying (QPSK) symbols and a second set of QPSK symbols, wherein every successive predetermined number of information bits are mapped to a first QPSK symbol and a second QPSK symbol in one symbol period in accordance with a mapping table;
  - a first modulation unit coupled to the mapping unit for converting the first QPSK symbol into a first QPSK constellation symbol; and
  - a second modulation coupled to the mapping unit for converting the second QPSK symbol into a second QPSK constellation symbol.
2. The system of claim 1, further comprising a first and a second antennas coupled to the first and second modulation units, respectively, for transmitting the first and the second QPSK constellation symbols simultaneously.
3. The system of claim 1, wherein the predetermined number of information bits is three.
4. The system of claim 1, wherein the first and the second set of QPSK symbols include one of four states 0, 1, 2 and 3.

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5. The system of claim 1, wherein the first and the second QPSK constellation symbols include one of four states 1, j, -1 and -j.

6. The system of claim 1, further comprising a receiver antenna for receiving QPSK constellation symbols transmitted in a same symbol period and combined in the air.

7. The system of claim 6, wherein the received constellation symbols combined in the air correspond to an 8-point signal constellation.

8. The system of claim 1, further comprising a dedicated transport channel for transmitting the plurality of information bits to the channel encoder.

9. The system of claim 1, wherein the channel encoder is a rate 1/3 turbo encoder.

10. A method of enhancing transmission rate in a wireless communication system, comprising:

providing a plurality of information bits; and

mapping the plurality of information bits into a first set of quadrature phase shift keying (QPSK) symbols and a second set of QPSK symbols, wherein every successive predetermined number of information bits are mapped to a first QPSK

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symbol and a second QPSK symbol in one symbol period in accordance with a mapping table.

11. The method of claim 10, further comprising converting the first and the second QPSK symbols into a first QPSK constellation symbol and a second QPSK constellation symbol, respectively.

12. The method of claim 10, wherein the predetermined number of information bits is three.

13. The method of claim 10, wherein the step of providing a plurality of information bits includes turbo coding a different plurality of information bits.

14. The method of claim 13, wherein the turbo coding rate is  $1/3$ .

15. The method of claim 11, further comprising simultaneously transmitting the first and the second QPSK constellation symbols via a first and a second antenna, respectively.

16. The method of claim 10, further comprising receiving QPSK constellation symbols transmitted in a same symbol period.

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17. The method of claim 16, further comprising combining the QPSK constellation symbols in the air and receiving the combined QPSK constellation symbols.

18. A method of enhancing transmission rate in a wireless communication system, comprising:

providing a first mapping table for establishing a correspondence between input binary bits and quadrature phase shift keying (QPSK) symbols, wherein every three successive bits are mapped to a first QPSK symbol and a second QPSK symbol in one symbol period;

providing a second mapping table for establishing a correspondence between the QPSK symbols and QPSK constellation symbols, in which each QPSK symbol is mapped to a QPSK constellation symbol; and

transmitting simultaneously two QPSK constellation symbols formed by three successive binary bits in one symbol period.

19. The method of claim 18, further comprising receiving two QPSK constellation symbols in an 8-point signal constellation.

20. The method of claim 18, wherein each QPSK symbol includes one of the four states 0, 1, 2 and 3.

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21. The method of claim 18, wherein each QPSK constellation symbol includes one of the four states 1, j, -1 and -j.

22. The method of claim 18, further comprising providing a dedicated transport channel for transmission of a plurality of binary bits.

23. The method of claim 22, wherein comprising providing a rate 1/3 turbo encoder for encoding the plurality of binary bits.

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